The large center-of-mass energy of pp collisions at the LHC allows the production of events with high jet $p_T$ and high $N_j$, with a $Z$ boson.

$\rightarrow$ Measurements provide test of pQCD predictions.

$\rightarrow$ Background to many SM measurements and BSM searches.

The first differential measurements of $Z$ production in association with jets with pp collision data at a center-of-mass energy of $\sqrt{s} = 8$ TeV.

$\rightarrow$ 2012 data, 19.6 fb$^{-1}$ of integrated luminosity.

$\rightarrow$ Comparison with:

• Tree level + PS by MADGRAPH 5 & PYTHIA 6.

• NLO + PS by Sherpa 2 & Blackcat. ($Z$+1,2j @NLO; 3,4j @LO)

$\rightarrow$ A disagreement about 10% observed between MADGRAPH predictions and the measurements, mainly for jet $p_T > 100$ GeV & roughly independent of the jet rapidity.

$\rightarrow$ A good overall agreement is seen between SHHERPA predictions and the data.